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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/791,999 | 03/03/2004 | Yong-Hyun Kim | F-8152 | 4283 |

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EXAMINER

SALDANO, LISA M

ART UNIT PAPER NUMBER

3673

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,999

Applicant(s)

KIM, YONG-HYUN

Examiner

Lisa M. Saldano

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 6 is/are rejected.
- 7) ☒ Claim(s) 3, 4 as dependent from 3 and 5 as dependent from 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 7 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 2, 4 and 5 are objected to because of the following informalities:

Regarding claim 2, line 3, it appears that the claim would read better if reworded "...outer casing and are horizontally positioned.

Regarding claim 4, lines 2-3, the applicant recites limitations regarding "the flange" and "the jet guide holder." However, prior language from which the claim depends fails to make prior mention of these elements. For the purpose of prior art examination, the examiner assumes that claim 4 depends from claim 3, which provides proper basis for these particular limitations.

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Regarding claim 5, line 2, the applicant recites limitations regarding "the nozzle" and "the flange." However, prior language from which the claim depends fails to make prior mention of these elements. For the purpose of prior art examination, the examiner assumes that claim 5 depends from claim 3, which provides proper basis for these particular limitations.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichise et al (3,969,902), hereon referred to as "Ichise'902," in view of Ichise et al (3,802,203), hereon referred to as "Ichise'203" AND in view of Kunito (5,304,016).

Ichise'902 discloses a construction method for a continuous row of piles and earth drill for use therefor comprising an earth drill 1a used for injecting into the ground wherein the drill comprises an injection pipe 6 through which ground hardening liquid 10 is injected under high pressure, and an outer casing 4 around the injection pipe (see column 3, lines 30-35 and Fig.4). A passage exists between the injection pipe 6 and the outer casing where mortar may or may not be supplied (see column 50-65). Ichise'902 discloses injection holders or nozzle attaching tubes 35

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coupled to an outer surface of the outer casing 4 at different levels on the casing (see Figs.8&10). Ichise'902 also discloses a bit 3 coupled to the lower end of the injection rod having an injection port 8 at the center of the bit (see column 4, lines 1-5 and Fig.4). Ichise'902 disclose that water 14 may be separately fed to the injection ports 8 (see column 5, lines 28-35). Ichise'902 also disclose that according to the invention, water is injected through the drill to cut the ground surrounding bores formed by the drill (see column 2, lines 20-30). Ichise'902 discloses an embodiment of the invention comprising a downwardly inclined jet hole or injection port 8 defined by the lower end of the rod, as evidenced by the downwardly inclined orientation of the fluid emitted therefrom in Fig.5. Moreover, Ichise'902 discloses that jet nozzles may be attached to the tube body of the inventions at an angle to the axial direction of the tube body (see column 7, lines 60-70 and Fig.11).

Regarding claim 2, Ichise'902 illustrates that the injection holders or nozzle attaching tubes 35 are coupled to the injection pipe and outer casing in a horizontal position (see Figs.8&10).

Regarding claim 6, as previously discussed, Ichise'902 discloses that jet nozzles may be attached to the tube body of the inventions at an angle to the axial direction of the tube body (see column 7, lines 60-70 and Fig.11).

However, Ichise'902 fails to disclose an air-feeding path in the invention. Ichise'902 also fails to explicitly disclose that the injection port 8 is used to cut the ground using water. Furthermore, Ichise'902 fails to explicitly illustrate an downwardly inclined hole with the inclined jet nozzle.

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Ichise'203 discloses a high-pressure jet-grouting method comprising an injecting tube 2 with a jet nozzle area 3. The jet nozzle area includes a nozzle 10 an air feeding path 13 used to direct a continuous flow of compressed air outwardly to the periphery of ground hardening agents delivered through jet nozzle 8. Ichise'203 discloses that the compressed air discharged from nozzle 10 act can substantially increase the jet distance of the jet flow of chemical or ground hardening agents. Ichise'203 further disclose that the term grouting includes any and all types of grouting such as chemicals, ground hardening agents, etc. (see column 3, lines 1-50). Ichise'203 further discloses a water opening or jet opening 5 on jet nozzle/bit 4 through which water may be discharged and thereby used to bore a hole in the ground 1 (see column 3, lines 1-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Ichise'902 to include an air feeding path, as taught by Ichise'203, because as suggested by Ichise'203, doing so provides an increased source of pressure to propel the ground hardening agent further into the ground improving the size and effectiveness of the resulting modified ground structure. Furthermore, a passage is disclosed between the injection pipe and the outer casing. Although Ichise'902 discloses that it is for use with mortar, he also discloses that the mortar may be supplied by other means. In addition, it would have been obvious to one of ordinary skill in the art to modify the invention of Ichise'902 to provide the cutting water nozzle at the center of the boring bit, as taught by Ichise'203, because it merely provides more structure to the suggestion of Ichise'902 to use water to cut and bore a hole in the ground (see above.)

Kunito discloses a method for forming a pillar in an earthen foundation comprising a rotating shaft 1 that is used to a spray consolidating fluid 3 made from cement milk or some other fluid (see column 5, lines 45-55). The invention has consolidating holes and fluid spray nozzles 2b that are downwardly inclined and spray the fluid diagonally downward (see Figs.5-9). Kunito discloses that spraying diagonally downward from the consolidating fluid spray nozzles provides stirring and mixing wherein the stirring and mixing ranges overlap each other three-dimensionally in the vertical direction, resulting in more effective mixture of the consolidating fluid (see column 9, line 25 to column 10, line 15).

It would have been obvious to one of ordinary skill in the art to provide the injections ports 8 of Ichise'902 such that they define jet holes that are inclined downwardly, as clearly illustrated by Kunito, because Ichise'902 already illustrates a downwardly inclined stream of fluid, as discussed above. Kunito provides more detail as to how the downwardly inclined stream of fluid is formed. Furthermore, Kunito clearly discloses the benefits of downwardly inclined streams of fluid, such as more effective stirring and mixing of the fluid in the earthen material.

Allowable Subject Matter

5. Claims 3, 4 as dependent from claim 3, and 5 as dependent from claim 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakanishi et al (4,624,606), Yahiro et al (4,084,648), Kanematsu (JP-59038416-A), Sekine (JP-06049834-A), Nakanishi et al (5,234,289), Ishida et al (5,141,366) and Reed et al (4,659,259) disclose features that at pertinent to the present application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa M. Saldano whose telephone number is 703-605-1167. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather C. Shackelford can be reached on 703-308-2978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lms



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